

n44

N91 - 17057

PAYLOAD ACCOMMODATIONS

AVIONICS NEEDS	CURRENT TECH	HOLES
<p>USER ORIENTED</p> <ul style="list-style-type: none"> - Be Able to Talk to Their P/L - Get Better Onboard Data Storage - Obtain Vehicle Data (Vector & Attitude) - Video Services 		
REDUCE PAYLOAD CREW DEPENDENCE		<p>AUTO ROBOTICS EXPERT SYSTEMS VOICE RECOGNITION COMPUTERS</p>
AUTONOMOUS RENDEROUS & DOCKING	<p>SENSORS</p> <ul style="list-style-type: none"> - OPTICAL & LASER DOCKING - OMV - DOCKING & GRAPPLING MECHANISMS 	<p>BETTER SENSORS</p> <ul style="list-style-type: none"> - RELATIVE NAVIGATION - ROBOTIC VISION
STANDARDIZATION OF DATA FORMATS & INTERFACES	SATELLITE COMM GROUND STATIONS	
ENCRYPTION		
ONBOARD COMPUTER PROCESSING CAPABILITY		

AVIONICS NEEDS	CURRENT TECH	HOLES
USER FRIENDLY SYSTEM		
INCREASE MEMORY CAPACITY/ DATA STORAGE MEDIUM		
INCREASE FAULT TOLERANCE		
INCREASE RELIABILITY		
NEED AUTOMATION		
MANIPULATOR CONTROL		
PAYLOAD NAVIGATION		

GENERAL OBSERVATIONS

- NEED DIRECT INVOLVEMENT FROM PAYLOAD/USERS (I.E. SATELLITE, UTILIZATION OFFICES)
 - PAYLOAD ACCOMMODATIONS "NEEDS" IDENTIFIED
- CONCERN WITH BUDGET SHORTFALL
 - ELIMINATION OF CAPABILITIES AND GROWTH MARGINS FOR PAYLOAD USERS

FINDINGS

- INCREASE OPS EFFICIENCY FOR PAYLOAD SERVICES
 - USE OF COMMERCIAL/INDUSTRY/DOD STANDARD
 - USE OF AUTOMATION AND EXPERT SYSTEMS
 - SEPARATION OF HOST VEHICLE & P/L ACCOMMODATIONS TO THE EXTENT PRACTICAL
 - STANDARDIZE SET OF ROBUST SERVICES
 - MODULAR DESIGN TO ACCOMMODATE GROWTH AND UPGRADES

FINDINGS (CONT'D)

- NEED FOR INCREASED SAFETY
 - ADVANCED ONBOARD AVIONICS SOFTWARE TO ENHANCE ABORT CAPABILITY FOR PAYLOAD RETURN
 - AUTONOMOUS RENDEZVOUS AND DOCKING ALLOWS LOCAL CONTROL OF TIME CRITICAL OPERATIONS OF UNMANNED VEHICLE

NEEDS

HOLES

ENHANCING MANNED
OPERATIONS OF PAYLOADS

LACK OF TECHNOLOGICAL
MATURITY IN:

- RELIABLE VOICE CONTROL
- ROBOTIC VISION
- ENHANCED DISPLAY SYSTEMS
- PATH-PLANNING/COLLISION
AVOIDANCE FOR VEHICLE AND
MANIPULATOR
- MULTIPLE VEHICLE MANIPULATOR
CONTROL

"NEEDS"

"HOLES"

ULTRA RELIABLE MANRATED
SOFTWARE

ENHANCING UNMANNED, ONBOARD
OPERATIONS FOR PAYLOADS

VERIFICATION OF SELF ADAPTIVE
SOFTWARE

IMMATURE TECHNOLOGY IN
SENSORS/SYSTEMS

- RELATIVE NAVIGATION
- ROBOTIC VISION
- PATH PLANNING AND COLLISION
AVOIDANCE FOR VEHICLES AND
MANIPULATORS

"NEEDS"

"HOLES"

RELIABLE/AVAILABLE
MANIPULATOR

ENHANCE DATA
COMMUNICATION CAPABILITY
FOR PAYLOAD

INCREASE ONBOARD DATA
STORAGE

FAULT TOLERANT SYSTEM

LACK OF DEFINED REQUIREMENTS

CAPABILITY FOR LONGTERM

– 10^{12}

– SPACE HARDENING

– FAST RANDOM ACCESS

SUMMARY/RECOMMENDATIONS

- CURSORY LOOK ACROSS PAYLOAD ACCOMMODATIONS SUBJECTS
- TOPICS RECOMMENDED FOR NEXT PAYLOAD ACCOMMODATIONS MEETING
 - SPACE BASE TRANSFER VEHICLES
 - USER NEEDS
 - FOCUS ON SPECIFICS
- SYSTEMS ENGINEERING EFFORT REQUIRED
 - COORDINATE DISCIPLINES AND PROGRAMS (VEHICLE/PAYLOADS)
 - FOCUS TECHNOLOGY PLAN ACROSS ALL PROGRAMS
 - DEVELOP COMMONALITY ACROSS ALL PAYLOADS

